CHEMICAL & ENGINEERING NEWS

C&EN

MARCH 16, 1992

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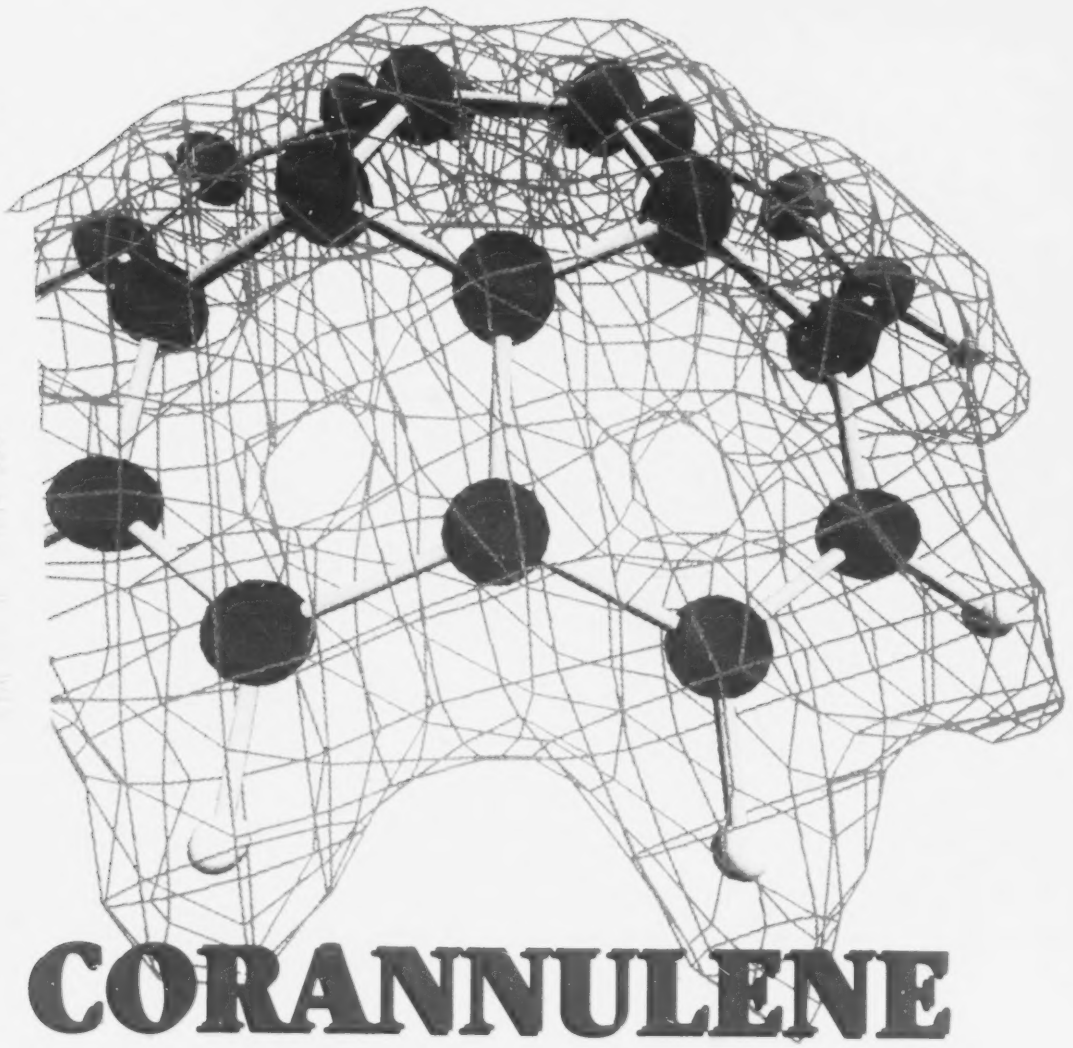
CRIMINAL PHASE OF BHOPAL LITIGATION BEGINS IN INDIA PAGE 7



CORANNULENE

Bowl-shaped hydrocarbon is surprisingly flexible

Page 27

CHEMICAL & ENGINEERING NEWS

C&EN

MARCH 16, 1992

NEWS OF THE WEEK

■ Chemists at Pennsylvania State University have found that "metallo-carbohedrene" clusters containing eight titanium atoms and 12 carbon atoms are remarkably stable, promising significant expansion of the molecular clusters field. Page 4

■ Space shuttle flight scheduled for next week will carry ATLAS-I, the first in a series of missions designed to probe the chemistry and physics of the atmosphere. Page 5

■ FDA launches effort to speed up approval of biotechnology drugs, hiring 50 new reviewers and appointing a new head for the responsible unit. Page 6

■ A strategic, long-term vision for civilian science and technology, calling for transfer of funding from defense R&D, is outlined in report by House Committee on Science, Space & Technology. Page 6

COVER: Computer graphic image shows curved corannulene molecule with carbon in blue, hydrogen in yellow, and electron density represented by red network. Graphic produced by Kim Baldridge of San Diego Supercomputer Center

Volume 70, Number 11
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ISSN 0009-2347

NEWS FOCUS

Union Carbide's involvement with the 1984 methyl isocyanate accident at its Bhopal plant continues as an Indian court issues criminal charges against the company and former chairman Warren M. Anderson. Page 7

BUSINESS

Companies are confronted with a big leap in costs of health benefits for retirees, the result of a new accounting standard that requires setting aside millions, or even billions, of dollars to cover these benefits. Page 17

International Trade Commission is considering changing to a new format for its annual synthetic organic chemicals report based on the Harmonized Tariff System. Page 22

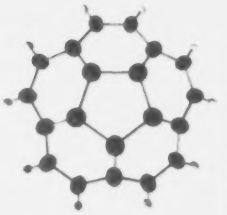
GOVERNMENT

Economic recovery, OSHA reform, and energy legislation are some of the issues being debated and discussed by Congress in this election year. Page 24

SCIENCE/TECHNOLOGY

A biennial conference, "Chemistry as a Life Science," tracks the intensifying involvement of chemistry at the interface with biology. Page 29

COVER STORY



Recent studies indicate that the bowl-shaped corannulene molecule is not rigid at room temperature, as was previously thought, but instead is extremely flexible. Page 27

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LETTERS

Employment guidelines

As a long-time advocate of the ACS Professional Employment Guidelines, I regret that no mention of this pertinent document was made in the letter by Nelson Marans (C&EN, Jan. 27, page 2), in which he related a 30-year-old incident of a student who accepted an expense-paid transcontinental interview trip solely in order to visit his parents in a nearby city.

The very first statement in Professional Employment Guidelines addresses this situation quite completely: "The prospective employee should apply only for positions in which there is a serious interest, a belief that job qualifications are met, and a willingness to consider acceptance of an employment offer."

Approximately 18,000 copies of the current edition of Professional Employment Guidelines were distributed in 1989, mostly to employers and to chemistry departments. Perhaps these guidelines should be distributed even more widely and made required reading for chemistry students, as well as their prospective employers. Of course, mere reading about the ethical standards that ACS expects of chemists will not automatically result in the elimination of unethical behavior. But it would be a step in the right direction.

Donald J. Berets
Stamford, Conn.

Amino acid derivatives

We at Synthetech Inc. read with keen interest the article on custom chemicals (C&EN, Feb. 3, page 25). However, we disagree with the closing paragraph, which implies that amino acid derivatives belong to a technology area not available in the U.S., and that one has to turn to Japan for these products.

Although we do not dispute the capabilities of Japanese or other overseas producers, we find this comment interesting, because we are exporting bulk quantities of protected amino acid derivatives from the U.S. to Japan, as well as to various countries in Western Europe. The rapidly growing customer base for our wide range of peptide building blocks includes major pharmaceutical companies, leading custom peptide firms, catalog houses, and research institutions worldwide. Our product quality, responsiveness to customer needs, and competitive pricing have earned us a place as a leading niche player in this emerging growth area. Synthetech is also the world leader in multikilo production of novel synthetic amino acids of exceptional chiral purity, for use as building blocks in therapeutic peptides.

Although it may appear to some industry observers that domestic expertise and capabilities for a wide range of fine chemicals and intermediates are no match for Japanese and European sources, it would be premature to include amino acid derivatives in this category. At least, not as long as Synthetech is growing and thriving.

M. (Sreeni) Sreenivasan
Chief Operating Officer
Synthetech Inc., Albany, Ore.

Energy taxes

I read Robert C. Amero's letter (C&EN, Feb. 17, page 3) on energy taxes with great interest. Although Amero is not the first to suggest imposing a gradually increasing tax on imported petroleum, the idea has much merit; however, my purpose here pertains to some of his statements.

One passage reads, "Second, people began to reproduce like locusts or lemmings. World population had been less than half a billion for eons; today it is about 7 billion and growing rapidly." Hyperbole for the most part. According to Table A.1 on page 181 in "World Development Report 1991," the estimated mid-1990 world population was 5,298 billion. The global-averaged population growth rate was 1.6% per annum, with minimum and maximum annual rates of 0.5% and 3.2% for Organization for Economic Cooperation & Development members and sub-Saharan Africa, respectively. At annual growth rates of 0.5%, 1.6%, and 3.2%, compounded instantaneously (for example, exponential growth), it would take 33.7, 17.4, and 8.7 years, respectively, to reach 7 billion people. When one examines exactly who is reproducing most rapidly, the terms "locusts" and "lemmings" appear to characterize people in the poorest developing countries. This is no less than slander and does not serve any useful purpose. My work involves international development, and one has to be very careful with the words that one uses, hence my sensitivity to what Amero probably did not recognize in his prose.

I also take issue with Cosby Field's statement (cited by Amero) about human slaves being absent from the engineer world, as if human relations would suddenly improve as a result of "cheap" ma-

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Companies Face Big Jump in Costs of Health Benefits for Retirees

■ ***New accounting rule requires firms to set aside millions of dollars to fund benefits; future retirees may lose some benefits***

Marc S. Reisch,
C&EN Northeast News Bureau

The costs of keeping retirees healthy is about to bring a big and unwelcome jolt to corporate finances. Because of a new accounting requirement, companies that provide health care benefits to their retirees will have to set aside millions, even billions, of dollars on their books to account for the costs of these benefits.

Those charges will come directly out of corporate net earnings. And though they will not immediately affect cash flow, they force companies to disclose an obligation that may in the future affect dividends, their ability to finance capital spending, and research and development funding. The charges also will include annual costs to companies that are higher than they are now to provide retiree health protection.

Even with these new financial arrangements, future pensioners, especially younger and newer employees, cannot relax. The set-asides will not necessarily provide health care for future retirees at the same levels that have been customary to date. Nor will they guarantee that corporate funds will be available to pay those benefits in the future if a company goes bankrupt. No law requires a corporation to establish separate funds for retiree health care costs as they are required to do to pay for pension benefits, though some are doing so to a limited extent.

In fact, the new accounting rule, known as financial accounting standard 106 (FAS 106), requires only that companies anticipate costs for retirees' postretirement benefits, other than pensions, on the companies' books. Although the standard includes other benefits such as life insurance, the rule focuses principally on postretirement health care benefits. The Financial Accounting Standards Board (FASB), Norwalk, Conn., the chief rule-making body for corporate accounting standards, issued the new rule in December 1990. Most corporations are required to adopt the rule no later than 1993.

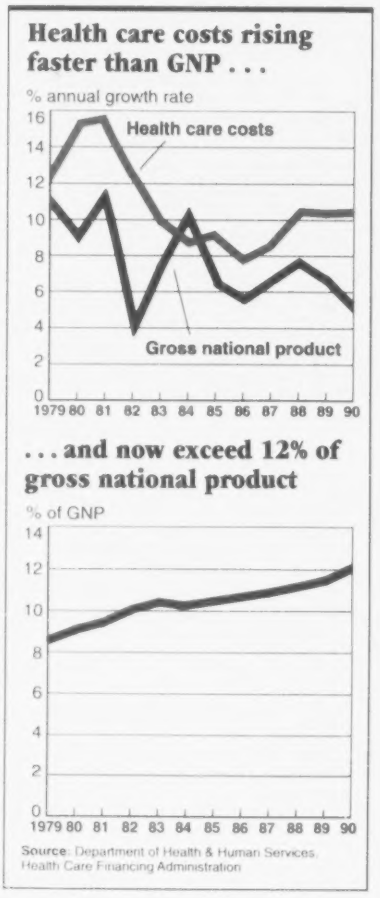
This change in accounting for retiree health benefits reflects the impact of spiraling health care costs in this country on both employers and employees. Younger employees will end up receiving less generous retiree health benefits, and at higher personal cost, than will their older colleagues already at or approaching retirement.

Many companies are already making moves to contain the costs they have to meet for retiree health benefits. Some are requiring retirees to contribute to the cost of health insurance. Others are eliminating postretirement health insurance coverage for employees who are just entering the work force and whose retirements are decades away.

David M. Sullivan, an accountant at FASB, says the rule requires companies that provide retirees with health benefits to account for the benefits throughout the working life of the employee. FASB considers those benefits a form of deferred compensation, and its rule requires corporations to take a charge on their books for them as they are incurred. Most corporations that now provide retiree health benefits account for them only as they are paid out.

For instance, Dow Chemical paid out $53 million before taxes to provide current U.S. retirees with health care benefits in 1991, says a company spokesman. Under the new rules, which Dow plans to implement in the first quarter of 1993, Dow estimates it will have to set aside close to $155 million annually on its books to pay for current retiree health costs, and also to provide a reserve for its obligation to employees who will retire in the future. Dow no longer will account for retiree health care purely on a pay-as-you-go basis. It will effectively switch to an accrual accounting method, which will force the company to build up a cash reserve on its books to recognize employees' claims to future health care benefits.

However, the big impact of the FASB rule is that Dow will be required to take a one-time charge of about $1.5 billion (appearing on the books as a $1



New rule may dampen R&D, capital spending

Most people may think of financial accounting standard 106 (FAS 106) only as an accounting rule involving very large numbers to account for retiree health benefit costs now and in the future. However, the rule could affect a company in a number of ways—some adverse and some beneficial.

For instance, cash flow may not be affected now, but the reserve on company books eventually will have to be paid out to satisfy "an ever escalating health care bill," says Scott Sprinzen, senior vice president and analyst of credit rating agency Standard & Poor's. The provision for retiree health benefits could ultimately limit funds available for dividends, R&D, and capital spending if health costs increase too fast, says Sprinzen. And FAS 106 in time could even hurt some companies' credit ratings, if companies cannot control costs, he adds.

On a separate financial note, Patricia L. Wilson, a principal with employee benefits consultant A. Foster Higgins, Philadelphia, suggests that FAS 106 will affect the cost of goods and services and therefore the competitiveness of companies with costly benefits plans. Somehow companies will have to come up with the money for retirees' health benefits. In 1990, U.S. car makers added $1086 on average to the price of a vehicle to cover health care costs for employees, about half of whom are retired. That is about $500 more per vehicle than Japanese competitors build into the price of their vehicles for the same purpose, according to the University of Michigan's Transportation Research Institute, Ann Arbor, Mich.

Postretirement health benefits have helped companies reduce their work force by enabling them to extend benefits to early retirees, notes Robert Cirkiel, senior manager of the group compensation and benefits unit of accounting firm KPMG Peat Marwick, New York. Companies promise to cover health benefits for retirees under 65 and their dependents until the retirees become eligible for Medicare. The government's General Accounting Office estimates corporate liabilities to provide health care benefits for retirees under 65 will amount to $99 billion.

But while extending benefits to early retirees to reduce the work force, and continuing to extend coverage beyond Medicare for older retirees, companies may build up enough of a liability on their books to make a purchaser of a company think twice. The purchaser would have to assume the costs for continuing to fund retiree health benefits. As a result, it may pay a lower price for the firm to account for those costs. Conversely, shareholders would receive less money if their company were sold because of the health care liability to retirees.

Michael B. Sirkin, a principal with accounting firm Price Waterhouse, Los Angeles, says, "Some smaller takeovers we evaluated fell apart after we evaluated the promises the takeover targets made to employees."

billion after-tax charge) in the first quarter of 1993 to set its books right. That one-time charge will allow the company to catch up to the reserve it should have on its books to fund current and future retiree health care costs. If that charge would have been taken in the first quarter of 1991, it would have resulted in a roughly $500 million net loss instead of a $578 million net profit.

Dow has not yet decided if it will establish a separate fund in which to set aside accrued dollars for retiree health care. Heino Zell, Dow USA director of compensation and benefits, says Dow executives are mulling over funding mechanisms now. Just between 1988 and 1991, Dow's costs for retiree health care benefits on a pay-as-you-go basis rose 36%, from $39 million in 1988 to $53 million in 1991.

Current Dow retirees need not worry. Zell says they will continue to get full coverage of benefits, which include health costs not covered by Medicare, the federal government's insurance program for retired senior citizens. However, those who retire from Dow USA after Jan. 1, 1993, will only get full coverage beyond Medicare if they worked for Dow at least 30 years. And the newest and youngest employees who join the company after Jan. 1, 1993, will receive no postretirement health care benefits. Instead, says Zell, they can voluntarily contribute to a tax-free fund. Dow will make matching contributions out of which employees may pay health care costs when they retire. "Long term we are getting out of post-Medicare supplementary benefits," says Zell. The move is intended to limit Dow's long-term liability.

Dow will match employees' after-tax contributions up to $30 a month, in what it terms a retirement health care assistance plan. Dow is waiting for an Internal Revenue Service go-ahead on whether the plan, as the firm envisions it, would be tax-free. Dow's contribution would become available only upon an employee's retirement. Employees who leave to take another job would receive lump sum returns of their contribution, but without Dow's contribution. "If someone leaves Dow," says Zell, "we don't have an obligation to support them."

Dow employees who retire after Jan. 1, 1993, without 30 years of service, or employees who join Dow after that date and don't put in enough years to retire with a large health care assistance fund, may not have ample coverage for retirement, acknowledges Zell. But "we are just committed to help them for the time they spent with Dow," he says.

Dow provides just one vivid example of the changes FAS 106 is forcing corporations and their employees to confront. The government's General Accounting Office (GAO) estimates all corporate liabilities on a pay-as-you-go basis for health care benefits to cover 9 million retirees along with spouses and dependents was $114 billion in 1991. These numbers include early retirees under the age of 65 and dependents. Had FAS 106 been in effect in 1991, corporate costs and charges would have reached $42 billion. GAO further estimates companies' 1991 accrued retiree health liabilities at $335 billion.

Past, present, and projected increases in health care costs for retirees have to be understood within the framework of huge overall increases in national health care costs. According to the government's Health Care Financing Administration (HCFA), Americans' health care costs increased 178% between 1979 and 1989, from $217 billion to $603 billion. The numbers include all public and private spending. HCFA projects national health care costs will reach more than $1.6 trillion by the year 2000.

Spending on Medicare was up 266% from $24 billion for plan participants over age 65 in 1979 to $88 billion in 1989. HCFA projects Medicare spend-

ing for participants over 65 will reach $273 billion in 2000.

Certainly increases in costs have affected everyone. National health care spending has grown from slightly less than 9% of the country's gross national product in 1979 to over 12% in 1990. HCFA projects it will reach 16% of GNP by 2000. However, the effects of increased costs have been more pronounced on the population over 65 than for the population as a whole. That is, in part, because the over-65 population is growing faster than the general population. U.S. population grew roughly 10% between 1979 and 1989 to 257 million, whereas the population over 65 grew 22% to 30 million.

It is no surprise then that Medicare costs have grown from 11% to 15% of U.S. annual health expenditures between 1979 and 1989, even though the government has instituted procedures to control Medicare expenditures. And it is no wonder, too, that employers are increasingly concerned about their responsibilities to retirees for the costs Medicare does not pay. Robert Cirkiel, an actuary and senior manager specializing in health care at the accounting firm KPMG Peat Marwick, New York, says employers have good reason to be concerned. Their costs are set to rise as the federal government cuts back on Medicare benefits, the U.S. population continues to age, more people take advantage of medical care, new and more costly medical technology becomes available, and ever more expensive wonder drugs come onto the market.

But is the answer to spiraling costs, like Dow's, to eventually end traditional health care insurance for retirees? Du Pont's Jack Stair, finance treasury senior consultant, thinks not. "The cost, not the program, is the problem," he says. Setting up health savings plans as Dow proposes to do, only shifts the costs to the retiree who may or may not have enough money saved up to cover his or her costs, says Stair. Du Pont plans no change in retiree health benefits for current or future retirees. They will continue to receive coverage for out-of-pocket expenses that Medicare does not cover.

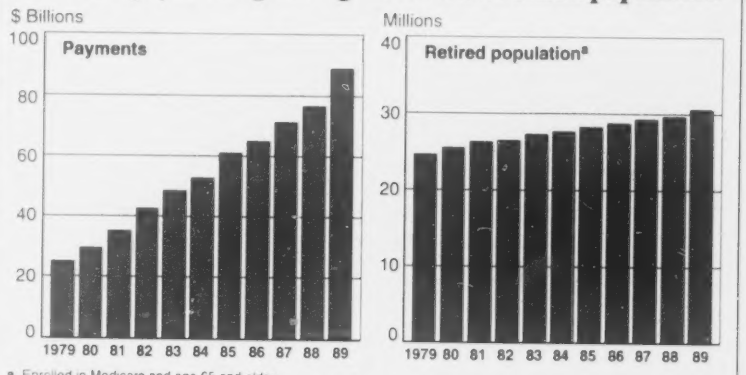
Du Pont advocates a national solution to the spiraling costs of medical care, says Stair. There is just so much one company—even one as large as Du Pont—can do to limit medical costs, he adds. However, Du Pont is not hoping for a federal program to provide national medical insurance, such as the one Canadians have had for a number of years. He believes that such a program would dole out benefits with the compassion of the IRS, at the speed of the post office, and at Pentagon prices.

Instead, Stair suggests that Congress act on such matters as medical billing practices and insurance company practices to help control medical costs. An insurance tax credit, which President Bush recently proposed to allow all Americans some degree of health coverage via tax credits, also would go a long way to controlling medical costs, he says.

Du Pont accounting consultant Roderick K. Davis says the company currently spends about $250 million per year on postretirement health care benefits. When Du Pont adopts FAS 106 beginning in the first quarter of 1993, it will have to set aside annually between $450 million and $700 million to account for current and future obligations to retirees. The company currently has no plans to separately fund retiree health care benefits.

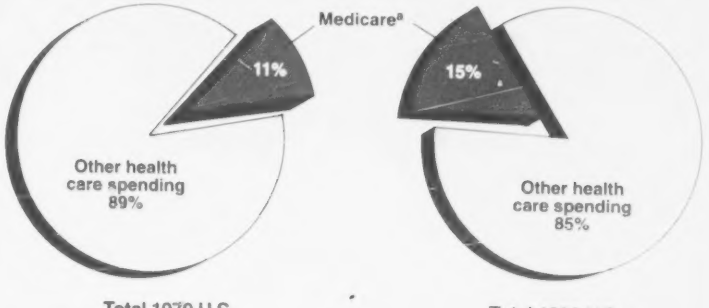
But again, like Dow, the biggest wallop for Du Pont will come as a one-time charge of from $4.6 billion to $6.2 billion (the equivalent of from $3 billion to $4 billion after taxes). That is the largest "transition obligation" recorded to date among chemical industry companies. General Motors' obligation of from $16 billion to $24 billion before taxes is so far the largest transition obligation any company has announced. If Du Pont had taken its transition charge in the first quarter of 1991, net income of $590 million would have become a net loss of from $2.4 billion to $3.4 billion.

Medicare payments growing faster than retired population



a Enrolled in Medicare and age 65 and older
Source: Department of Health & Human Services, Health Care Financing Administration

Medicare is rising share of total medical spending


Medicare[a]
11%
Other health care spending 89%
Total 1979 U.S. medical spending = $217 billion
15%
Other health care spending 85%
Total 1989 U.S. medical spending = $603 billion

a Age 65 and older **Source:** Department of Health & Human Services, Health Care Financing Administration

General Electric already knows the cost of complying with FAS 106. In 1990, before it adopted the new rule, GE paid $249 million for retiree health benefits. After it adopted the rule in 1991, the company's annual contribution for current and future retiree benefits rose to $279 million.

The company also took a one-time transition charge of $1.8 billion after taxes ($2.7 billion before taxes) to account for health benefits payable to current and future retirees. GE had already set aside $1.5 billion before taxes on its books prior to its adoption of the new accounting rule, so the total now held aside on its books adds up to $4.2 billion. The catch-up charge effectively resulted in a retroactive net loss of $800 million for the first quarter of 1991—GE's first quarterly loss in more than 20 years.

But despite the enormous charges, GE has actually increased the benefits it now pays to retirees. The increases in both daily benefits for hospitalization and lifetime maximums were the result of a new contract the company negotiated with its unionized employees in June 1991. GE automatically extends nonunionized labor the same benefits it negotiates with unionized employees. A GE spokesman says that the company has the same concerns as everyone else. However, its bargain with employees is a "calculated risk." The contract with unionized employees comes up for renewal at the end of June 1994. Since health benefits are subject to negotiation, he says, benefits for retirees can change.

Can companies change postretirement health care plans? Benefits attorney Linda E. Rosenzweig, of Epstein, Becker & Green, Washington, D.C., says yes. An employees' rights to benefits after retirement can change up until retirement as long as the company clearly reserves the right to do so.

To date, few companies besides GE have adopted the new accounting rules. Benefits consulting firm A. Foster Higgins & Co., Philadelphia, says that about half of all employers who provide postretirement health care benefits have not decided when they will adopt FAS 106. An informal C&EN survey finds that chemical producers such as Ashland, FMC, and W. R. Grace have made no decision on how to comply with the accounting standard. However, Monsanto, Morton International, Arco Chemical, and Cabot have come to some determinations.

Monsanto says it has accrued after-tax health care obligations to current and future retirees of about $1 billion. After-tax obligations for Morton International are in the $100 million range, Arco Chemical's are about $30 million, and for Cabot they are about $28 million. Although two of the four have yet to make any change in postretirement health benefits, Morton International and Cabot have made changes.

Morton International recently changed its plan so that full benefits go to those with the longest service. Cabot's corporate staff controller, Mario J. Cornacchio, says FAS 106 forced the company to review health care costs and it has decided to put a cap on Cabot's contribution to active employees' and retirees'

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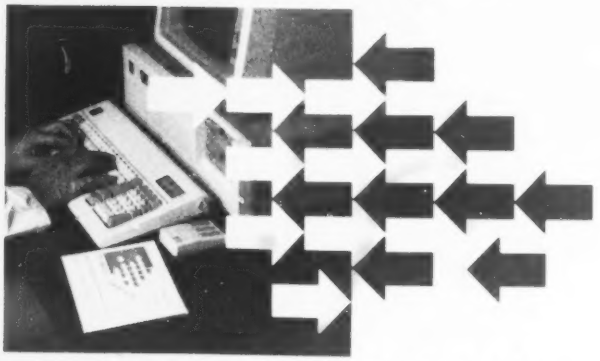

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health care plans. "Employees and retirees will shoulder higher costs in the future," says Cornacchio. The company does not plan to separately fund its health care obligations to employees now, though it is considering this for the future. "The warning is out," adds Cornacchio. "Just as people save for retirement by putting aside money to supplement Social Security, they will have to put aside money for health care, too."

Tax-deferred options allowing employees to put aside money for the cost of health care in retirement are limited, notes KPMG Peat Marwick's Cirkiel. Voluntary Employee Beneficiary Associations and so-called 401H plans (a supplement to a retirement account) allow limited tax-deferred employee and employer contributions. But given the national debt, Cirkiel notes that the government is loathe to give tax breaks at this time. He also suggests that corporations consider buying life insurance policies for current employees. Benefits paid out could fund retiree group health costs, he suggests.

However, Patricia L. Wilson, a principal with A. Foster Higgins, believes that future pension benefits for today's employees will be so good that employees will be able to pay a significant portion of their health benefits. It is a common belief, she says, that people accumulate capital when they work and deplete it in retirement. However, today's large-company employees will retire with sound defined pensions as well as the proceeds from their profit-sharing 401K plans. And given the additional value of Medicare benefits and Social Security, most retirees from large firms will be well off, she says. Employers must encourage their employees to think of their 401K plans "as a vehicle to pay for a portion of their retirement health care benefits."

Thus employees not only have to examine closely their retirement health care benefits, but they also must look closely at their pension benefits to be sure these benefits will help defray health care costs. Out-of-pocket health care expenses for the elderly rose from $1589 per household in 1961 to $3305 per household in 1991 in constant 1991 dollars. And although the $17.5 billion the elderly spent to pay premiums and other out-of-pocket expenses represented 11% of after-tax income in 1961, the $67 billion the elderly spent in 1991 represents 17% of after-tax income, according to Families USA, a Washington, D.C.-based nonprofit research group. "Medicare has helped our parents and grandparents, but despite Medicare, older Americans are today being squeezed much harder by health costs than during John F. Kennedy's time," says Ron Pollack, executive director of Families USA.

And today's workers "could retire without the benefits of today's pensioners," notes Michael B. Sirkin, a principal in the employee benefits services unit of accounting firm Price Waterhouse, Los Angeles. In a warning to both employers and employees, he says that "promises large companies make to pay benefits in the future are only as good as the companies' ability to pay. The value of those promises depends on the financial strength of a company." □

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